Chapter #3 Powers & Exponents

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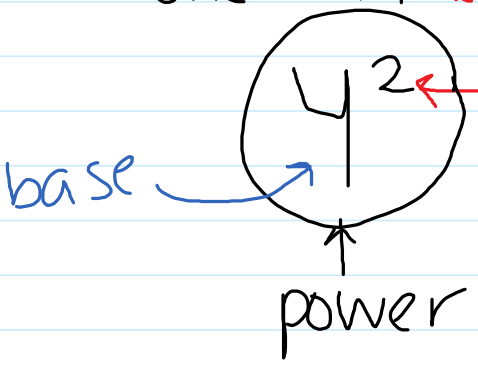
3.1 Using Exponents to Describe Numbers

Power an expression made up of a base and an exponent



base the # you multiply by itself in a power

$4^2 = 4 \times 4$

$4^3 = 4 \times 4 \times 4$

$44 = 4 \times 4 \times 4 \times 4$

Exponent the # of times you multiply the base in a power

Ex #1 Write as a POWER (exponential form) and solve/evaluate

(a) $2 \times 2 \times 2 \times 2 \times 2 = 2^5 = \boxed{32}$

(b) $(3)(3)(3) = 3^3 = \boxed{27}$

(c) $5 \cdot 5 \cdot 5 = 5^3 = \boxed{125}$

(d) $7 = 7^1 = \boxed{7}$

Ex #2 Write as a repeated multiplication and solve

(a) 4^6

$= 4 \times 4 \times 4 \times 4 \times 4 \times 4$

$= \boxed{4096}$

(b) 9^5

$= 9 \times 9 \times 9 \times 9 \times 9$

$= \boxed{59,049}$

POWERS with Negative Bases

Ex #3 Identify the base of each power then evaluate

(a) $(-3)^4$ BASE -3

$= (-3) \times (-3) \times (-3) \times (-3)$

$= 9 \times 9 = \boxed{81}$

(b) -3^4 BASE 3

$= -3 \times 3 \times 3 \times 3$

$= -9 \times 9 = \boxed{-81}$

(c) $-1(-3)^4$ BASE -3

$= -(-3) \times (-3) \times (-3) \times (-3)$

$= -9 \times 9 = \boxed{-81}$

* another way of writing this

$-(-3)^4 = -1(-3)^4$

$= -1 \times (-3) \times (-3) \times (-3) \times (-3)$

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